Two hundred and ninety-seventh Meeting.

August 11, 1847. — QUARTERLY MEETING.

The PRESIDENT in the chair.

The Corresponding Secretary laid on the table an engraved portrait of the late Professor DE CANDOLLE, a Foreign Honorary Member of the Academy, presented by his son, Prof. Alphonse De Candolle, of Geneva. On motion of the Vice-President, it was gratefully accepted, and ordered to be placed in a frame.

The following gentlemen were elected Foreign Honorary Members of the Academy, viz.: —

The Rev. Dr. Whewell, Master of Trinity College, Cambridge.

M. U. J. Leverrier, of Paris.

John C. Adams, Esq., Fellow and Tutor of St. John's College, Cambridge University.

The following gentlemen were chosen Fellows of the Academy, viz.: —

Hon. Samuel A. Eliot, of Boston.

Benjamin A. Gould, jr., of Boston.

George P. Bond, Assistant at the Observatory, Cambridge.

Mr. Everett stated, that, as President of the University, he felt it his duty, on behalf of the Corporation, to embrace the earliest opportunity of formally acquainting the Academy that the great telescope ordered for the Observatory at Cambridge had arrived in good order in all parts, and had been successfully mounted. The object-glass was received in November last, and the other portions a short time since. The delicate and somewhat difficult task of mounting and adjusting this very large instrument had been performed with great expedition and skill by Mr. Bond and his son, the Director and Assistant Observer. Mr. Everett felt bound to make this statement to the Academy, and to accompany it with the renewed acknowledgments of the Corporation for the very liberal subscription of the Academy to the fund for purchasing the telescope. This subscription, amounting to three thou-

sand dollars, was not only in itself of the greatest importance, but had been still more useful from having been tendered at the earliest stage of the enterprise, and when its success was uncertain. He further stated, that, although the instrument had been but for a very short time in operation, its performance was such as to warrant the belief, that it fully came up to the conditions of the order under which its manufacture was undertaken by Messrs. Merz and Mahler, — which were, that it should be as good as any instrument of its class in the world.

Mr. Everett then read the following letter from Mr. Bond, the Director, furnishing some information in detail as to the performance of the instrument in reference to test objects.

" *Observatory at Cambridge*, 26 *July*, 1847.

" Dear Sir : —

" I take great pleasure in complying with the request you made, during your last visit to the Observatory, that I should prepare for you a brief account of the large refracting telescope which has recently been placed within its walls.

" The construction of this instrument was intrusted to the eminent opticians and mechanicians, Messrs. Merz and Mahler, of Munich, in Bavaria, the successors of the celebrated Frauenhofer. By the terms of the contract, they bound themselves to make for us a telescope equal in dimensions to the one at Pulkova, and of the best quality they were able to produce. We received the object-glass of this telescope in November, 1846. The tube and machinery arrived on the 11th of last month. We had prepared for the support of this instrument a stone pier, composed of massive blocks of granite, resting on a bed of hydraulic cement, made with coarse gravel, which forms a mass almost as solid as the stone itself. The substratum is fine gravel mixed with sand. The diameter of the pier is twenty feet at the base, and ten feet at the top. In form it is the frustum of a cone, and is surmounted by a single block of granite, two feet in thickness and ten feet in diameter, weighing fourteen tons. On this rests the stone pedestal, eleven feet high, weighing about nine tons, to which are attached the bed-plate of the hour-axis and framework of the telescope. Five hundred tons of granite were employed in constructing this pier.

" The hour-circle of the instrument is eighteen inches in diameter, and reads by two verniers to single seconds of time in right ascension.

The declination-circle is two feet in diameter, and reads by four verniers to four seconds in arc. The object-glass has fifteen inches clear aperture, and twenty-two feet eight inches focus. It is furnished with a filar-position micrometer, and four annular micrometers. There are eighteen eye-pieces, the highest power being estimated by the maker at two thousand. After adjusting and securing the various parts, the whole was found to move freely and steadily under clock-work, it being well balanced in all its parts, and the friction greatly reduced, by a judicious arrangement of counterpoises and friction-wheels. The instrument is protected from the weather by a dome of thirty feet interior diameter. It moves freely on eight cannon-balls, and is secured from displacement by storms, by eight iron braces, which are secured to the walls of the building, and present friction-wheels to the opposite sides of the interior of the dome. The opening is five feet wide; the shutters are opened and closed by means of endless chains, working in teethed pulleys turned by a crank. I omit the details of mounting the telescope, as they are of little general interest, and will be given in the report to the Visiting Committee on the Observatory, when I hope to be enabled to add to them an account of the new transit-circle, which Mr. Simms has nearly completed.

"In regard to the ultimate capabilities of our telescope, we cannot be expected, from so short a trial, to have formed any very decisive opinion. It has, however, even under the disadvantage of a bad state of the atmosphere, exceeded our expectations. We have had the best opportunities of making observations during the early morning hours.

"Of the close double stars, our attention was first directed to η Coronæ. The components appeared round, small, and well separated. The difficult double star γ Coronæ, which Captain Smyth ranks in his 'Cycle' as the 'Præses of Struve's vicinissimæ,' was well separated, a dark space appearing between the principal star and its satellite. On the morning of the 20th July, the companion of γ Andromedæ was also well separated. The line micrometer gave a distance of three tenths of a second. I was surprised to find, on following this object into day-light, that our measures of distance could be taken after sunrise. I measured, alternately with my son, both in distance and position, while the sun was shining on the telescope, and we both thought that we saw them full as well, or rather better, after sunrise than before. This might be owing to a quieter state of the atmosphere consequent on a rise of the thermometer. On the evening of the 15th of July, the nebula No. 27 Messier, commonly known as

the dumb-bell nebula, exhibited a multitude of points of light, with a few larger stars, which were probably accidental, or not belonging to it, scattered over its surface. Three observers were confident of the resolution of this nebula. It occupied considerably more space than the field of the telescope would take in, and the form by which it has hitherto been distinguished was entirely lost. There appear, however, to be two centres of condensation.

"On the same evening, α Lyræ was examined. It showed a small round disk; but the troubled state of the atmosphere rendered it unsteady. Thirty-five stars were counted in the same field with it. The ring nebula of Lyræ was beautifully shown. My friend, Hon. Wm. Mitchell, who was observing with us, was confident that he saw many stars within the compass of the ring.

"The companion of Antares, discovered by Professor Mitchell of Cincinnati, was quite conspicuous, notwithstanding the tremulous state of the atmosphere at the low altitude of the star. The great nebula in Andromeda has a bright central point closely resembling a star. I do not recollect having seen any notice of this.

"On examining the moon near the quadrature, the light is so exceedingly vivid, when the whole aperture of the object-glass is used with a power of 180, that it becomes painful to the eye. With higher powers, the mountains are brought out in bold relief, and the depths are opened. On the evening of the 20th, having a friend with me who takes a strong interest in these matters, we were examining the moon along the boundary of light and darkness, and saw what had every appearance of being the effect of atmospheric refraction. The deep black shadows of the rugged mountain-tops, stretching far across the plains until they were lost sight of in the unilluminated portion, enabled us by contrast to distinguish what seemed to be the first gray tint of dawn, and to trace the gradually increasing light to the full splendor of mid-day.

"But I must recollect that you require of me only a brief account of our telescope. The objects revealed to us by this excellent instrument are so numerous and interesting, that it is difficult to know where to stop.

"With the highest regard and respect,

"I remain, dear Sir, yours sincerely,

"W. CRANCH BOND.

"To President Everett."

In conclusion, Mr. Everett expressed the hope, that the members of the Academy might eventually witness such accessions to the astronomical science of the country, from the observations made by this admirable instrument, as would be considered by them a satisfactory equivalent for so large an appropriation of the Academy's funds.

Two hundred and ninety-eighth Meeting.

October 5, 1847. — MONTHLY MEETING.

The PRESIDENT in the chair.

The Corresponding Secretary presented a communication from Professor Henry, Secretary of the Smithsonian Institution, in reference to the organization of that institution; which, on motion of the Vice-President, was referred to a committee, consisting of Mr. Everett, Prof. Gray, Prof. Agassiz, Prof. Peirce, Prof. Longfellow, and Prof. Sparks.

Mr. Bond communicated the following

OBSERVATIONS ON THE PLANET NEPTUNE, NEAR ITS QUADRATURE.

Made at Cambridge Observatory, Long. $4^{h}\cdot 44^{m}\cdot 32^{s}\cdot$.

Cambridge M.S.T. of Observation.	Planet follows No. 7740 B. A. C.	Planet south of No. 7740 in Dec.	Mean Position of Star, Jan. 1, 1847.	No. of Comp.
1847. d. h. m.	m. s.	′ ″	h m. s.	
May 14 15 44	6 08.67	5 04.9	A. R. 22 04 07.53	4
19 15 39	6 19.30	4 17.3	Dec. −11° 49′ 04″.4	1
20 15 42	6 20.55	4 12.2		6
28 15 44	6 29.17	3 37.1		5

OBSERVATIONS ON THE PLANET NEPTUNE, MADE WHEN NEAR ITS OPPOSITION.

Cambridge M.S.T. of Observation.	App. A. R. of Neptune.	Obs. − Eph.	App. Declination of Neptune.	Obs. − Eph.	Mean position of 38 Aquarii, Jan. 1, 1847.	No. of Comp.
1847. d. h. m.	h. m. s.	s.	° ′ ″	″	h. m. s.	
Aug. 18 11 13	22 05 41.75	−0.03	−12 21 42.9	+0.2	A. R. 22 02 26.57	4
" 20 10 11	22 05 29.36	−0.13	−12 22 51.2	−0.5	Dec. −12° 18′ 52″.0	8
" 21 10 32	22 05 22.89	−0.25	−12 23 26.5	−0.7	38 Aquarii is No.	10
" 23 10 26	22 05 10.40	−0.22	−12 24 37.6	+0.6	7722 B. A. C.	6

The columns headed "Observed — Ephemeris" contain a comparison with Mr. Adams's Ephemeris in the June number of the Notices of the London Astronomical Society.